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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,475	08/09/2002	Willi Neff	127FR/50787	5559

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EXAMINER

THOMAS, COURTNEY D

ART UNIT PAPER NUMBER

2882

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/019,475

Applicant(s)

NEFF ET AL.

Examiner

Courtney Thomas

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 11 is/are rejected.
- 7) ☒ Claim(s) 8-10 and 12-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 August 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12/31/01 .                      6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because the gas filled space (7) is not labeled in Figures 2 and 3 (see disclosure p. 17, paragraph [0042] and p.18 paragraph [0044]). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show a micro-channel plate or a Kumakhov lens as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. Claims 1, 4, 12 and 13 are objected to because of the following informalities:
4. Claim 1 recites a limitation of ... "the plasma channel" ... Examiner notes that there is no antecedent basis for this term.
5. Claim 4 recites the limitation ... "the anode" ... Examiner notes that independent claim 1 recites the presence of "two main electrodes." The electrodes are not made distinguishable by reference to function or structure. As written, it is unclear which electrode in claim 1 is to be treated as an anode or a corresponding cathode.
6. Claim 12 recites the limitations of "the gas inlet and outlet opening" ... Examiner notes that there is no antecedent basis for this term.

7. Claim 13 recites a limitation of a “system of capillaries” ... it is unclear whether the plasma lines (15) – (see pp 19-20 and 22; Fig. 4) represent the system of capillaries or whether there is an alternate structure.
8. Appropriate correction is required.

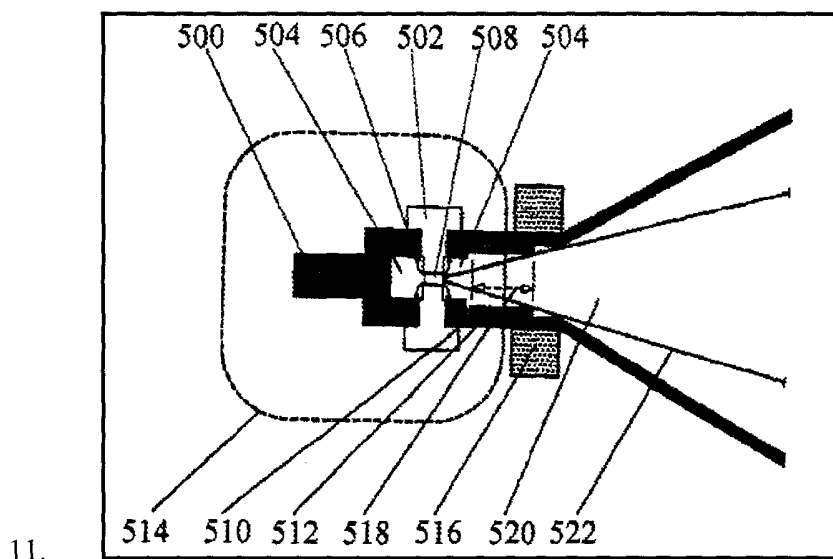
***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-7 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Silfvast et al. (U.S. Patent 6,031,241).



**Figure 5 – U.S. Patent 6,031,241 to Silfvast et al.**

12. **As per claim 1**, Silfvast et al. disclose a device comprising two main electrodes (**500, 510**), between which there is a gas filled space (not labeled above), wherein each of the two main electrodes (**500, 510**) exhibits an opening, defining an axis of symmetry, and wherein the electrodes (**500, 510**) are formed in such a manner that a gas discharge forms exclusively in the volume, determined by an alignment of the openings; and where a plasma channel (**508**) generated on the axis of symmetry is the source for at least one of the extreme ultraviolet (EUV - **522**) and X-rays and means for increasing conversion efficiency (**514, 516, 512, 520** – see Fig. 5, above).

13. **As per claims 2-7 and 11**, Silfvast et al. disclose a device wherein at least one of the openings on the side facing away from the space is larger than on the side facing the space; wherein the openings exhibit the shape of a truncated cone and wherein an auxiliary electrode (**512**) is provided behind the opening of one of the main electrodes and a pulse forming network is provided as a power supply (see Fig. 5, above – column 1, lines 29-67; column 2, lines 1-52).

***Allowable Subject Matter***

14. Claims 8, 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. **As per claims 8 and 9**, the examiner found no reference in the prior art that disclosed or made obvious a device, wherein each main electrode has a plurality of openings, wherein the openings are arranged on a circle, through whose center runs the axis of symmetry.

Art Unit: 2882

16. As per claim 10, the examiner found no reference in the prior art that disclosed or made obvious a device, wherein each main electrode has a ring shaped opening whereby the center of the ring lies on the axis of symmetry.

17. As per claim 14, the examiner found no reference in the prior art that disclosed or made obvious a device, wherein the system of capillaries is a micro-channel plate or a Kumakhov lens.

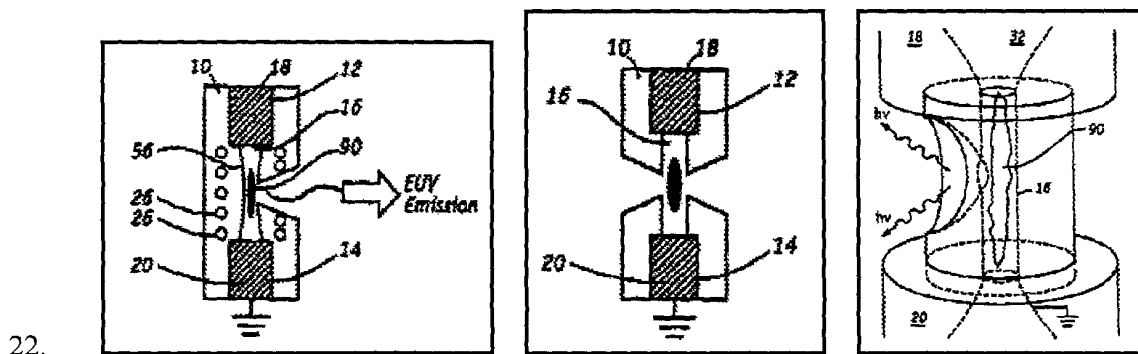
18. Claims 12 and 13 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

19. As per claim 12, the examiner found no reference in the prior art that disclosed or made obvious a device, wherein there is at least one additional gas inlet or gas outlet opening.

20. As per claim 13, the examiner found no reference in the prior art that disclosed or made obvious a device, wherein a system of capillaries is a micro channel plate or a Kumakhov lens.

### Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:



23. U.S. Patent 6,654,446 to Bender, III discloses several structures for EUV emission (see above Figs).


Art Unit: 2882

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (703) 306-0473. The examiner can normally be reached on M - F (9 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308 4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

CT  
Courtney Thomas

  
DAVID V. BRUCE  
PRIMARY EXAMINER